



MAIL STOP APPEAL BRIEF-PATENTS
PATENTS
8013-1155-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Gaku HARADA et al.

Appeal No.

Application No. 10/716,672

Group 1795

Filed November 20, 2003

Examiner Cynthia Lee

ELECTRODE USING IMPROVED ACTIVE MATERIAL
FOR BATTERY AND CAPACITOR

APPEAL BRIEF

MAY IT PLEASE YOUR HONORS:

May 7, 2008

(i) **Real Party in Interest**

The real party in interest in this appeal is the Assignee, NEC TOKIN CORPORATION of Miyagi, Japan.

(ii) **Related Appeals and Interferences**

Neither the appellant, appellant's legal representative nor the assignee know of any other prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

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(iii) **STATUS OF THE CLAIMS**

Claims 1 and 4-18 are pending, from whose final rejection this appeal is taken. Claims 2 and 3 were cancelled.

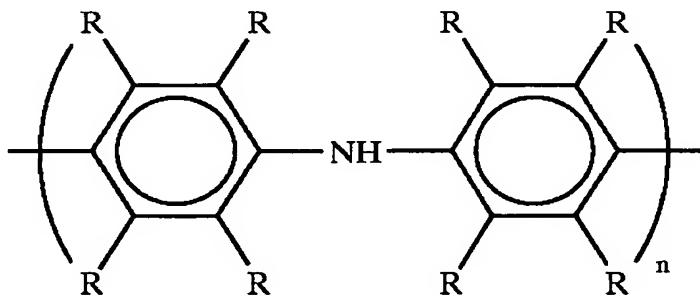
(iv) **STATUS OF AMENDMENTS**

There are no outstanding amendments. The claims have not been amended since the August 28, 2007 amendment. These claims were finally rejected by the Official Action mailed November 1, 2007 (the "Official Action"). The claims are as set forth in the Claims Appendix.

(v) **SUMMARY OF CLAIMED SUBJECT MATTER**

Claims 1 and 4 are independent.

Claim 1 recites a conductive polymer comprising a polybiphenylaniline, wherein said polybiphenylaniline is represented by the following general formula:



(Specification page 6, lines 20-25)

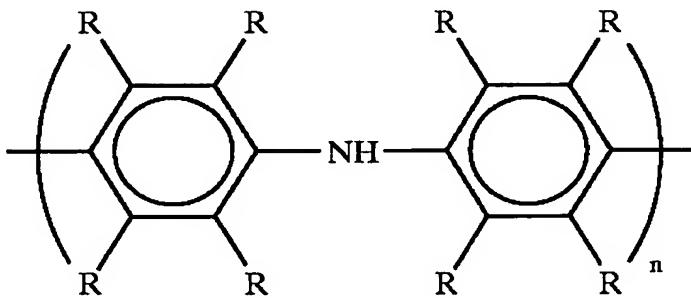
where R is any one of hydrogen atom, halogen atom, hydroxyl groups, carboxyl groups, sulfonic groups, sulfuric groups, nitro groups, cyano groups, alkyl groups, aryl groups, alkoxy groups, aryloxy groups, amino groups, alkylthio groups, arylthio groups, and heterocyclic groups, provided that individuals of R are not limited to be the same, and

(Specification page 7, lines 1-7)

said polybiphenylaniline is doped with dopant comprising at least an acid having a single site of a group which dissociates a proton.

(Specification page 7, lines 8-10)

4. A conductive polymer comprising a polybiphenylaniline, wherein said polybiphenylaniline is represented by the following general formula:



(Specification page 6, lines 20-25)

where R is any one of hydrogen atom, halogen atom, hydroxyl groups, carboxyl groups, sulfonic groups, sulfuric groups, nitro groups, cyano groups, alkyl groups, aryl groups, alkoxy groups, aryloxy groups, amino groups, alkylthio groups, arylthio groups, and heterocyclic groups, provided that individuals of R are not limited to be the same,

(Specification page 7, lines 1-7)

said polybiphenylaniline is doped with dopant comprising an acid having at least a single site of a group which dissociates a proton, and

(Specification page 7, lines 8-10)

wherein said acid is selected from the group consisting of a sulfuric acid, a hydrochloric acid, a perchloric acid, a benzene sulfonic acid, a p-toluene sulfonic acid, benzenesulfonyl chloride, a dodecylbenzene sulfonic acid, a methane sulfonic acid, a trifluoromethane sulfonic acid, a butane sulfonic acid, a trichlorobenzene sulfonic acid, a naphthalene sulfonic acid, a perfluorobutane sulfonic acid, and a perfluoroctane sulfonic acid.

(Specification page 7, lines 10-19)

(vi) **Grounds of Rejection to be Reviewed on Appeal**

A first ground of rejection on appeal is whether claims 1, 4-6, and 11-15 were properly rejected under 35 U.S.C. §102(b) as being anticipated by HIRAI et al. JP 61-206170 ("HIRAI").

A second ground of rejection on appeal is whether claims 1, 4-6 and 11-15 were properly rejected under 35 U.S.C. §103(a) as being obvious over KOBAYASHI et al. U.S. 4,740,436 ("KOBAYASHI").

A third ground of rejection on appeal is whether claims 7 and 8 were properly rejected under 35 U.S.C. §103(a) as being obvious over HIRAI in view of PIENIMAA et al. U.S. 6,110,563 ("PIENIMAA").

A fourth ground of rejection on appeal is whether claims 9, 10 and 16-18 were properly rejected under 35 U.S.C. §103(a) as being obvious over HIRAI in view of KATHIRGAMANATHAN et al. U.S. 4,992,559 ("KATHIRGAMANATHAN").

A fifth ground of rejection on appeal is whether claims 7 and 8 were properly rejected under 35 U.S.C. §103(a) as being obvious over KOBAYASHI in view of PIENIMAA.

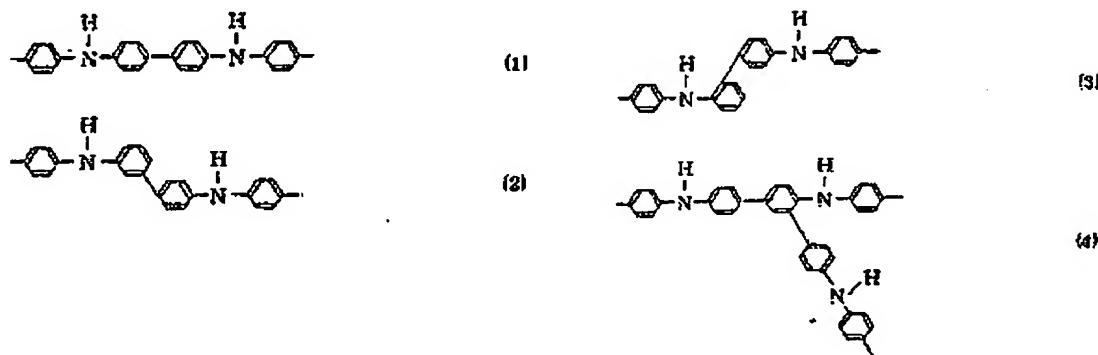
A sixth ground of rejection on appeal is whether claims 9, 10 and 16-18 were properly rejected under 35 U.S.C. §103(a) as being obvious over KOBAYASHI in view of KATHIRGAMANATHAN.

(vii) **Arguments**

Arguments Concerning the First Ground of Rejection: the rejection of claims 1, 4-6, and 11-15 under 35 U.S.C. §102(b) as being anticipated by HIRAI et al. JP 61-206170 ("HIRAI").

The Examiner relies on the English abstract of HIRAI for teaching polymers or copolymers of diphenyl amine.

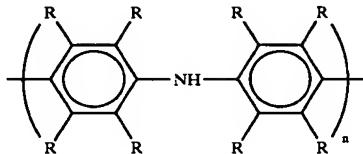
The Examiner relies on the underlying Japanese document of HIRAI for teaching other features of the present claims. For example, the Examiner cites page 352 for teaching diphenyl amine formulas (1) - (4):



The Examiner also cites page 353 for teaching that "the polymer is doped with perchloric acid (ClO_4^-)", but the Examiner fails to explain how page 353 teaches the claimed dopant feature.

HIRAI fails to anticipate the claimed invention for at least three reasons:

I. HIRAI does not disclose polybiphenylaniline according to independent claims 1 and 4:



The abstract discloses polymers and copolymers of diphenyl amine. The underlying Japanese document, however, as the structures from page 352 demonstrate, is limited to dimer structures of diphenyl amine, which may also include a branched diphenyl amine group. Thus, in view of the underlying document, HIRAI is directed to the dimer of diphenyl amine.

II. HIRAI does not disclose a doped polybiphenylaniline according to independent claims 1 and 4.

The abstract does not disclose a dopant, and the underlying Japanese document illustrates a reaction between a hydrocarbon (CH_n) and (ClO_4^-) .

The Examiner fails to explain how " (ClO_4^-) " on page 353 of the underlying document teaches a doped polymer, when doping is not mentioned in the abstract.

III. The abstract and underlying document differ.

As the abstract and underlying Japanese document differ in the features disclosed, appellant requested a full English language translation of HIRAI in the Amendment filed August 28, 2007. Neither appellant nor appellant's counsel

is in possession of an English translation of the full document. See, e.g., page 9, lines 11-18 of the Amendment filed August 28, 2007.

The Examiner refused to provide a translation of the underlying document. See the Examiner's remarks from page 7, line 7 to page 8, line 4 of the Official Action.

MPEP 706.02II states that "citation of and reliance upon an abstract without citation of and reliance upon the underlying scientific document is generally inappropriate where both the abstract and the underlying document are prior art".

The MPEP goes on to state: "To determine whether both the abstract and the underlying document are prior art, a copy of the underlying document must be obtained and analyzed. If the document is in a language other than English and the Examiner seeks to rely on that document, a translation must be obtained so that the record is clear as to the precise facts the Examiner is relying upon in support of the rejection." (Emphasis added).

Thus, not only does HIRAI fail to disclose the claimed invention based on the sections cited by the Examiner, but the record is not clear as to the precise facts the Examiner is relying upon in imposing the anticipation rejection.

Therefore, reversal of the rejection of independent claims 1 and 4, and dependent claims 5, 6, and 11-15 is accordingly respectfully requested.

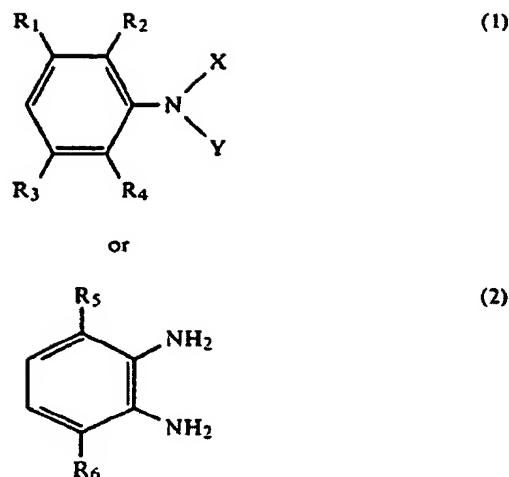
Arguments Concerning the Second Ground of Rejection: the rejection of claims 1, 4-6 and 11-15 under 35 U.S.C. §103(a) as being obvious over KOBAYASHI et al. U.S. 4,740,436 ("KOBAYASHI").

KOBAYASHI is offered for teaching a non-aqueous secondary battery comprising a polymer of aniline derivative that is doped with an acid, such as hydrochloric acid.

The position of the Examiner is that one of ordinary skill in the art would have recognized poly(diphenylamine) as one of a relatively small number of polymers disclosed by KOBAYASHI.

However, KOBAYASHI fails to explicitly teach polybiphenylaniline.

Instead, KOBAYASHI discloses that the aniline derivative is a polymer or copolymer of one of monomer (1) or monomer (2):



wherein R₁ through R₆ independently represent a hydrogen atom or an alkyl group or alkoxy group having 1 to 5 carbon atoms, and X and Y independently represent a hydrogen atom or a phenyl group.

KOBAYASHI further discloses a list of specific possible structures for monomer (1) and monomer (2):

As typical examples of the aniline compounds represented by the general formulae (1) and (2), there can be mentioned aniline, 2-methylaniline, 2,5-dimethylaniline, 2-methoxyaniline, 2,5-dimethoxyaniline, o-phenylenediamine, 3-methyl-1,2-diaminobenzene, diphenylamine and triphenylamine. Of these aniline compounds represented by the general formulae (1) and (2), aniline, o-phenylenediamine and triphenylamine are preferred and aniline is especially preferred. The copolymer comprises at least 50 mole % of units derived from the compound represented by the general formula (1) or (2). As the comonomer, there can be mentioned benzene, thiophene and pyrrole.

See, e.g., column 2, lines 56-68.

Indeed, KOBAYASHI especially prefers aniline, as shown above, as well as the Examples of KOBAYASHI.

Thus, KOBAYASHI fails to recognize the superior results that may be obtained by a polymer based on biphenylaniline as described by independent claims 1 and 4, as opposed to a polymer based on aniline itself.

The present application compares the performance of a conductive polymer comprising polybiphenylaniline to a conductive polymer comprising polyaniline itself, i.e., the especially preferred polyaniline of KOBAYASHI.

For example, Figure 2 demonstrates that the claimed invention, e.g., Example I, provides a voltage-discharge capacity substantially greater than KOBAYASHI's polyaniline, e.g., Comparative Example 1, shown in Figure 3.

Additionally, Figure 4 demonstrates that the capacity-discharge current of the claimed invention is superior.

Moreover, the ratio of capacity to initial capacity decreases more significantly with the number of cycles for KOBAYASHI's polyaniline, compared to the claimed invention, as shown in Figure 5.

Therefore, reversal of this obviousness rejection of independent claims 1 and 4, and dependent claims 5, 6, and 11-15, is accordingly respectfully requested.

Arguments Concerning the Third Ground of Rejection: the rejection of claims 7 and 8 under 35 U.S.C. §103(a) as being obvious over HIRAI in view of PIENIMAA et al. U.S. 6,110,563 ("PIENIMAA").

HIRAI is relied on for the reasons previously discussed regarding the First Ground of Rejection. The record is not clear as to the precise facts relied on by the Examiner for teaching the features of the independent claims 1 and 4.

PIENIMAA is offered for teaching an electromagnetic shielding that is prepared using a conductive polymer such as polyaniline. However, regardless of the ability of PIENIMAA to teach that for which it is offered, PIENIMAA fails to teach the features of the independent claims or clarify the record with respect to the teachings of the HIRAI abstract and document.

Indeed, neither HIRAI nor PIENIMAA recognizes the superior results obtained by the claimed conductive polymer.

For example, Figures 2-5 of the present application demonstrate that selection of the claimed polybiphenylaniline and dopant provides superior results for the performance of the claimed conductive polymer in terms of battery voltage versus discharge capacity, battery voltage versus discharge current, and the ratio of capacity to the initial capacity over the cycle number of the battery

of the conductive polymer.

While there are data tables in the underlying Japanese document of HIRAI, the meaning of the data has not been identified.

Therefore, reversal of the rejection is accordingly respectfully requested.

Arguments Concerning the Fourth Ground of Rejection: the rejection of claims 9, 10 and 16-18 under 35 U.S.C. §103(a) as being obvious over HIRAI in view of KATHIRGAMANATHAN et al. U.S. 4,992,559 ("KATHIRGAMANATHAN").

HIRAI is offered for the reasons discussed above with respect to the First Ground of Rejection. The record is not clear as to the precise facts the Examiner is relying upon in support of HIRAI teaching the features of the independent claims 1 and 4.

KATHIRGAMANATHAN is offered for teaching that electroconductive polymers can have many uses. However, regardless of the ability of KATHIRGAMANATHAN to teach that for which it is offered, KATHIRGAMANATHAN fails to teach the features of the independent claims or clarify the record with respect to the teachings of the abstract and underlying Japanese document of HIRAI.

Arguments Concerning the Fifth Ground of Rejection: the rejection of claims 7 and 8 under 35 U.S.C. §103(a) as being obvious over KOBAYASHI in view of PIENIMAA.

KOBAYASHI is offered for the reasons discussed above with respect to the Second Ground of Rejection. The Examiner recognizes that KOBAYASHI fails to teach using a conductive polymer as electromagnetic shielding material.

PIENIMAA is offered for teaching an electromagnetic shielding that is prepared using a conductive polymer such as polyaniline.

However, regardless of the ability of PIENIMAA to teach that for which it is offered, PIENIMAA fails to remedy the deficiencies of KOBAYASHI for reference purposes. PIENIMAA fails to disclose or suggest the claimed conductive polymer, as well as the superior results as discussed above.

Therefore, reversal of the rejection is accordingly respectfully requested.

Sixth Ground of Rejection: the rejection of claims 9, 10 and 16-18 under 35 U.S.C. §103(a) as being obvious over KOBAYASHI in view of KATHIRGAMANATHAN.

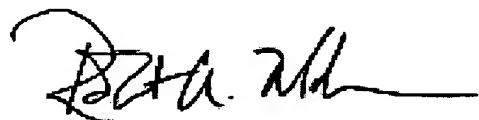
KOBAYASHI is offered for the reasons discussed above with respect to the Second Ground of Rejection. The Examiner recognizes that KOBAYASHI does not teach that the conductive polymer can be used in other devices.

KATHIRGAMANATHAN is offered for the reasons discussed above. However, regardless of the ability of KATHIRGAMANATHAN to teach that for which it is offered, KATHIRGAMANATHAN fails to remedy the deficiencies of KOBAYASHI for reference purposes.

Therefore, reversal of the rejection is accordingly respectfully requested.

Respectfully submitted,

YOUNG & THOMPSON



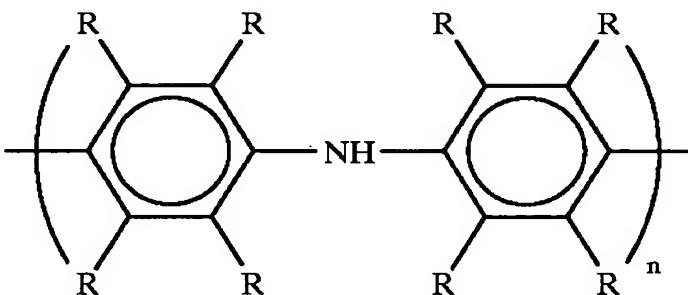
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(viii) **Claims Appendix**

The claims on appeal are:

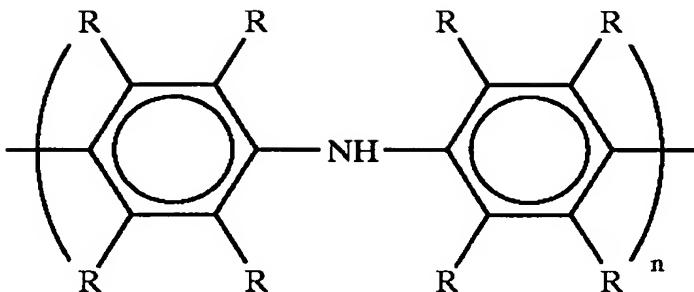
1. A conductive polymer comprising a polybiphenylaniline, wherein said polybiphenylaniline is represented by the following general formula:



where R is any one of hydrogen atom, halogen atom, hydroxyl groups, carboxyl groups, sulfonic groups, sulfuric groups, nitro groups, cyano groups, alkyl groups, aryl groups, alkoxy groups, aryloxy groups, amino groups, alkylthio groups, arylthio groups, and heterocyclic groups, provided that individuals of R are not limited to be the same, and

said polybiphenylaniline is doped with dopant comprising at least an acid having a single site of a group which dissociates a proton.

4. A conductive polymer comprising a polybiphenylaniline, wherein said polybiphenylaniline is represented by the following general formula:



where R is any one of hydrogen atom, halogen atom, hydroxyl groups, carboxyl groups, sulfonic groups, sulfuric groups, nitro groups, cyano groups, alkyl groups, aryl groups, alkoxy groups, aryloxy groups, amino groups, alkylthio groups, arylthio groups, and heterocyclic groups, provided that individuals of R are not limited to be the same,

said polybiphenylaniline is doped with dopant comprising an acid having at least a single site of a group which dissociates a proton, and

wherein said acid is selected from the group consisting of a sulfuric acid, a hydrochloric acid, a perchloric acid, a benzene sulfonic acid, a p-toluene sulfonic acid, benzenesulfonyl chloride, a dodecylbenzene sulfonic acid, a methane sulfonic acid, a trifluoromethane sulfonic acid, a butane sulfonic acid, a trichlorobenzene sulfonic acid, a naphthalene sulfonic acid, a perfluorobutane sulfonic acid, and a perfluorooctane

sulfonic acid.

5. The conductive polymer as claimed in claim 1, wherein said polybiphenylaniline is doped with a dopant comprising at least one selected from acids excluding polymer acids.

6. The conductive polymer as claimed in claim 1, wherein said conductive polymer is used as an active material for an electrode.

7. The conductive polymer as claimed in claim 1, wherein said conductive polymer is used as an electromagnetic shielding material.

8. The conductive polymer as claimed in claim 1, wherein said conductive polymer is used for a conductive film.

9. The conductive polymer as claimed in claim 1, wherein said conductive polymer is used for an electrochromic material.

10. The conductive polymer as claimed in claim 1, wherein said conductive polymer is used for an anti-static

material.

11. An active material including a conductive material of claim 1.

12. An electrode using an active material of claim 11.

13. A battery using an electrode of claim 12.

14. The battery as claimed in claim 13, wherein said battery uses an electrolytic solution including an electrolyte of the same acid as doped into polybiphenylaniline.

15. An electrode using a conductive material of claim 1.

16. The electrode as claimed in claim 15, wherein said electrode is used in a semiconductor device.

17. The electrode as claimed in claim 15, wherein said electrode is used in an electronic device.

18. The electrode as claimed in claim 15, wherein
said electrode is used in an electric device.

(ix) **Evidence Appendix**

None.

(x) **Related Proceedings Appendix**

None.